

ENP due: Dec 18/04

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

001 24 2005

Applicant's or agent's file reference <b>13-128WO</b>	<b>FOR FURTHER ACTION</b>	see Form PCT/ISA/220 as well as, where applicable, item 5 below
International application No. <b>PCT/CA2005/000967</b>	International filing date (day/month/year) 22 June 2005 (22-06-2005)	(Earliest) Priority date (day/month/year) 28 June 2004 (28-06-2004)
Applicant <b>BOEHRINGER INGELHEIM INTERNATIONAL GMBH ET AL</b>		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 5 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

a. With regard to the **language**, the international search was carried out on the basis of:

☒ the international application in the language in which it was filed

☐ a translation of the international application into \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))

b. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I

2. ☒ **Certain claims were found unsearchable** (see Box No. II)

3. ☐ **Unity of invention is lacking** (see Box No. III)

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant

☐ the text has been established by this Authority to read as follows :

5. With regard to the **abstract**,

☐ the text is approved as submitted by the applicant

☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

6. With regard to the **drawings**,

a. the figure of the **drawings** to be published with the abstract is Figure No.

☐ as suggested by the applicant

☐ as selected by this Authority, because the applicant failed to suggest a figure

☐ as selected by this Authority, because this figure better characterizes the invention

b. ☐ none of the figures is to be published with the abstract

**Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of the first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons :

1. ☒ Claim Nos. : 20 and 23

because they relate to subject matter not required to be searched by this Authority, namely :

Although claims 20 and 23 are directed to methods of medical treatment of the human or animal body, the search has been carried out based on the alleged effects of the compounds and compositions thereof.

2. ☐ Claim Nos. :

because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically :

3. ☐ Claim Nos. :

because they are dependant claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows :

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claim Nos. :

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claim Nos. :

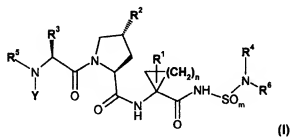
**Remark on Protest** ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

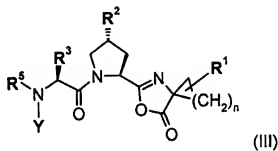
☐ No protest accompanied the payment of additional search fees.

## Box No. IV Text of the abstract (Continuation of item 5 of the first sheet)

The invention relates to compounds of formula (I)



wherein R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, Y, n and m are as defined herein. The compounds are useful for the treatment and prevention of hepatitis C viral infections in mammals by inhibiting HCV NS3 protease. The invention further relates to azalactone compounds of the formula (III) which can be reacted with an amide anion to produce the compounds of formula (I).



A. CLASSIFICATION OF SUBJECT MATTER IPC(7): C07D 495/04, C07D 413/04, C07D 207/16, C07D 403/12, A61P 31/14, A61K 31/422, A61K 31/4353, A61K 31/47, A61K 31/495, A61K 31/40, C07D 413/12, C07D 215/22, C07D 215/227		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC(7): C07D 495/04, C07D 413/04, C07D 207/16, C07D 403/12, A61P 31/14, A61K 31/422, A61K 31/4353, A61K 31/47, A61K 31/495, A61K 31/40, C07D 413/12, C07D 215/22, C07D 215/227  Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used) Canadian Patent Database, STN, Delphion, Espacenet, search terms: "HCV", "hepatitis", "NS3", "azalactone", "RNA"		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6, 869, 964 B2 (Campbell et al.) 15 April 2004	1-7 and 9-25
Y	entire document (cited in the application)	1-25
Y	CA 2,445, 938 A1 (Bailey) 24 February 2000 entire document (cited in the application)	1-25
P, X	WO 2005/046712 A1 (Scola et al.) 26 May 2005 entire document (cited in the application)	1-7 and 9-25
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.		
* Special categories of cited documents :	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention	
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone	
"E" earlier application or patent but published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art	
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family	
"O" document referring to an oral disclosure, use, exhibition or other means		
"P" document published prior to the international filing date but later than the priority date claimed		
Date of the actual completion of the international search 13 October 2005 (13-10-2005)	Date of mailing of the international search report 20 October 2005 (20-10-2005)	
Name and mailing address of the ISA/CA Canadian Intellectual Property Office Place du Portage 1, C114 - 1st Floor, Box PCT 50 Victoria Street Gatineau, Quebec K1A 0C9 Facsimile No.: 001(819)953-2476	Authorized officer  Cara Weir (819) 934-2322	

**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

International application No.  
PCT/CA2005/000967

Patent Document Cited in Search Report	Publication Date	Patent Family Member(s)	Publication Date
US6869964	22-03-2005	AU2003248535 A1 EP1506000 A1 WO03099316 A1	12-12-2003 16-02-2005 04-12-2003
CA2445938	24-02-2000	AU769738 B2 AU5273199 A BG105232 A BR9913646 A CA2338946 A1 CN1323316 A CZ20010516 A3 EA3906 B1 EE200100081 A EP1105413 A2 HR20010102 A1 HU0105144 A2 ID27839 A IL141012D D0 JP2002522554T T NO20010683 A NZ510396 A PL346626 A1 SK2062001 A3 TR200100432T T2 TR200200129T T2 US6268207 B1 US6323180 B1 US6329379 B1 US6329417 B1 US6410531 B1 US6420380 B2 US6534523 B1 WO0009543 A2	05-02-2004 06-03-2000 30-11-2001 05-06-2001 24-02-2000 21-11-2001 15-08-2001 30-10-2003 15-08-2002 13-06-2001 28-02-2002 29-04-2002 26-04-2001 10-02-2002 23-07-2002 02-04-2001 27-02-2004 25-02-2002 08-10-2001 21-09-2001 21-06-2002 31-07-2001 27-11-2001 11-12-2001 11-12-2001 25-06-2002 16-07-2002 18-03-2003 24-02-2000
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